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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
|-----------------|-------------|----------------------|---------------------|------------------|

10/549,648

09/15/2005

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21810-US

2235

22829 7590 04/29/2008

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EXAMINER

PANDE, SUCHIRA

ART UNIT

PAPER NUMBER

1637

MAIL DATE

DELIVERY MODE

04/29/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |                                      |  |
|------------------------------|--------------------------------------|--------------------------------------|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/549,648 | <b>Applicant(s)</b><br>SAGNER ET AL. |  |
|                              | <b>Examiner</b><br>SUCHIRA PANDE     | <b>Art Unit</b><br>1637              |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 04 February 2008 and 17 March 2008.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 15-17 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 15-17 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>3/17/2008</u> .   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Claim Status**

1. Amendment filed on February 4, 2008 is acknowledged. Applicant cancelled claims 1-14, amended claim 15. Claims 15-17 are currently pending and will be examined in this action.

### ***Information Disclosure Statement***

2. The information disclosure statement (IDS) submitted on 3/17/2008 was filed after the mailing date of the non final rejection on 6/14/2007. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

### ***Response to Amendment***

#### Re rejection of claim 15 under 112 2nd par.

3. Amendment to claim 15 overcomes the indefinite issue raised in the last office action. Accordingly this rejection is being withdrawn.

### ***Response to Arguments***

#### Re rejection of claims 15-17 under 35 U.S.C. 103(a) over Bell and Ranford-Cartwright as evidenced by Wittwer et al. in view of Hiratsuka et al.; Epstein et al. and ; Glazer et al.

4. Applicant's arguments with respect to claims 15-17 have been considered but are moot in view of the new ground(s) of rejection. Applicant has amended base claim 15 to add limitations that were not considered before. The cited art does not address the newly added limitations, hence new grounds of rejection are being introduced.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 15-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bell and Ranford-Cartwright (2002) Trends in Parasitology Vol. 18, No.8. pp-337-342 (provided by applicant in IDS) as evidenced by Wittwer et al. (1997) Biotechniques vol. 22, No.1 pp176-181, in view of Pinkel et al. (US pat. 5,837,196 issued November 17, 1998); Epstein et al. (2002) Analytica Chimica Acta 469: pp 3-36; and Glazer et al. (US pat. 6,150,107 issued Nov 21, 2000).

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Regarding claim 15, Ranford-Cartwright teach: real time PCR instrument (see page 339 Table 1 where comparison of 7 different real time PCR thermal cyclers is done. On page 339, Ranford-Cartwright teach LightCycler™ but do not recite structural details associated with this cycler. Wittwer et al. explicitly provides the structural details associated with LightCycler™ PCR instrument) comprising;

Wittwer et al. teach at least 1 light source, preferably an LED (See page 17 abstract where blue light-emitting diode (LED is taught).

Wittwer et al. teaches use of different filters for detection of SYBR® Green I (520-580 nm) , fluorescein (520-550 nm), rhodamine (580-620 nm) and Cy5™ (660-680 nm) dyes (see page 177 par. 3 and page 178 par. 1). Therefore they teach detection of three colors fluorescein, rhodamine and Cy5™ , each of said entities having central detection wavelengths which are distinct from each other by at least 25 nm (As can be seen from the wavelengths taught above that central detection wavelengths are distinct from each other by at least 25 nm),

Regarding claim 15, Wittwer et al. do not teach the limitation:

•a plurality of a least 5 optical fiber bundles, each said bundle transmitting light to one of a plurality of at least 5 separate fluorescent detector entities,

Regarding claim 15, Pinkel et al. teach : a plurality of a least 5 optical fiber bundles, (see abstract where plurality of groups of optical fibers are taught. By teaching plurality of groups of optical fibers Pinkel et al. teach a plurality of a least 5 optical fiber bundles,.

each said bundle transmitting light to one of a plurality of at least 5 separate fluorescent detector entities (Pinkel et al. also teach--These fibers, or group of fibers within a bundle, may be uniquely identified so that the fibers, or group of fibers, can be discreetly addressed. Further Pinkel et al. teach --The transmission ends of the optical fibers are then discreetly addressed to detectors--such as a multiplicity of optical sensors. (see abstract)., Thus teaching each said bundle transmitting light to one of a plurality of at least 5 separate detector entities.

Pinkel et al. teach the transmission end of the optical fibers comprising the optical fiber array are addressed to permit interrogation and detection of binding events (see col. 12 lines 51-53). They go on to teach the transmission ends, may be addressed by attaching the transmission end of each optical fiber or bundle of optical fibers bearing a particular biological binding partner to an individual detector (see col. 13 lines 1-5). i.e. they teach each said bundle transmitting light to one of a plurality of separate detector entities (see col. 13 line 9 where use of one or more detectors is taught).

In col. 15 lines 44-48, Pinkel et al. teach fluorescent labels and in col. 16 lines 6-10 they teach how sensitivity of fluorescence detection for different combinations of optical fiber, fluorochrome, excitation and emission bands can be optimized. Thus teaching each said bundle transmitting light to one of a plurality of at least 5 separate fluorescent detector entities

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and characterized in that said plurality of detector entities is capable of simultaneously detecting maximum fluorescence emission of at least 5 different fluorescent compounds

simultaneously detecting maximum fluorescence emission of at least 2 differently labeled TaqMan hybridization probes (see Ranford-Cartwright page 338 par. labelled “Hydrolysis probes” where TAMRA and ROX labeled TaqMan hybridization probes are taught. Therefore Ranford-Cartwright teach detecting maximum fluorescence emission of at least 2 differently labeled TaqMan hybridization probes. In other words once the maximum fluorescence wavelength of these hybridization probes is known, then the fiber detectors taught by Pinkel et al. will be able to detect them) , and

detecting maximum fluorescence emission of SYBR® Green I (see Ranford-Cartwright page 338, par. labeled “Detection systems for quantification” where SYBR® Green I detection is taught. Therefore maximum fluorescence emission of SYBR® Green I is known and hence one of the fiber optic bundles taught by Pinkel et al. could be optimized to detect maximum fluorescence emission of SYBR® Green I .

Examiner would like to point out that all of the capabilities “detecting 5 different fluorescent compounds----TaqMan hyb-----, detecting fluorescence of SybrGreen I” recited above for the detector entities are only intended use and do not impart any structural limitation to the detectors claimed. If the multiple detectors taught are capable of detecting the fluorescence then as far as the instrument is concerned it does not matter how the fluorescence was generated

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in the sample to be detected. All it matters is the emission wavelength window for which each of the fiber optic detectors is configured to detect.

means for heating and cooling (See page 178 section labeled Commercial Light Cycler par. 2 where Wittwer et al. teaches heating cartridge and a motor that drives chamber fan as a means for heating. The heater is disabled and the fan is run at high speed as cooling means).

multiple reaction vessels for containing a reaction mixture ( See Fig. 2 where Wittwer et al. teaches 24 sample carousel as multiple reaction vessels for containing a reaction mixture )

Regarding claim 16, Wittwer et al teaches a PCR instrument comprising exactly one light source (see claim 15 above where Blue light LED source is taught).

Claim 17, recites an instrument according to claim 15-16, characterized in that said central detection wavelengths are selected from a group of range of wavelengths, said group consisting of 520-540 nm, 545-565 nm, 570-590 nm, 600-620 nm, 630-650 nm, 660-680 nm, and 700-720 nm. The range of wavelengths recited only indicate intended use and do not provide further structural limitation to the claimed instrument and hence are not being considered further.

It would have been prima facie obvious to one of ordinary skill in the art to combine a plurality of optical fiber bundles, each said bundle transmitting light to one of a plurality of separate fluorescent detector entities as taught by Pinkel et



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al. in the fluorescent thermocyclers taught by Ranford-Cartwright as evidenced by Wittwer et al. at the time the invention was made.

The motivation to do so is provided to one of ordinary skill in the art by teachings of Epstein et al. and Pinkel et al.

Epstein et al. while reviewing fluorescence –based nucleic acid detection and microarrays state “The Taqman assay is a solution based FRET method designed to perform quantitative PCR product measurements in real time. By monitoring the reaction progress with FRET techniques, the need for gel electrophoresis or repetitive sample handling can be avoided”----- (see Epstein et al. page 7 section 2.3.3 Taqman real time PCR detection). They go on to state “Fluorescence measurements are made directly during the ongoing PCR cycles rather than at reaction completion. Taqman allows the reaction progress to be monitored in real time and is sensitive to single nucleotide polymorphisms” (see Epstein et al. page 9, par. 1).

Pinkel et al. state “the inclusion of fibers bearing biological binding partners specific for various analytes known to create a background signal in a particular assay provides a means for simultaneously measuring and subtracting out the background signal. The provision of a multiplicity of fibers bearing different species of binding partners allows the detection of multiplicity of moieties contributing to a background, or other, signal and the dissecting out of the contribution of each moiety to that signal.” (see col 1 lines 64-67 and col. 2 lines 1-5).

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Glazer et al. provides information to one of ordinary skill regarding the various labels that can be used for FRET and the emission wavelengths that are used for their detection. Thus providing guidance regarding what wavelength filters to use for each individual fluorescent detector so that depending on the combination of fluorescent labels that are used and the expected maximum emission wavelengths the multiple detectors will simultaneously detect fluorescence from appropriate fluorescent dye emissions. (See whole patent specially see col. 15 lines 24-42 and Fig. 4).

### ***Conclusion***

8. All claims under consideration 15-17 are rejected over prior art
9. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to SUCHIRA PANDE whose telephone number is (571)272-9052. The examiner can normally be reached on 8:30 am -5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gary Benzion can be reached on 571-272-0782. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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April 27, 2008